



# GREYSTONE ENERGY SYSTEMS INC

## DUCT CARBON DIOXIDE DETECTOR CDD4 Series

The CDD4A20 series uses a highly accurate and reliable Non-dispersive Infrared (NDIR) sensor combined with state-of-the-art digital linearization and temperature compensated circuitry to monitor duct CO<sub>2</sub> levels. The duct CO<sub>2</sub> transmitter principal of operation is based on the Venturi effect of the probe that extends into the HVAC duct. Air flowing through the duct is forced into the vent holes on one side of the probe, into the enclosure, over the CO<sub>2</sub> sensor and then the air is drawn back out of the enclosure via the vent holes on the opposite side of the probe. Optional temperature sensor and adjustable relay output is also available.



### SPECIFICATION:

Range:.....**CDD4A:** 0 - 2000 ppm  
**CDD4B:** 0 - 20,000 ppm standard, programmable span from 2000 to 20,000 ppm

Accuracy:.....**CDD4A:** ±30 PPM + 3% of reading with Auto Cal on.  
**CDD4B:** ±75 PPM or 10% of reading (whichever is greater)

Sensor:.....**CDD4A:** Non-Dispersive Infrared (NDIR), diffusion sampling  
**CDD4B:** Dual Channel Non-Dispersive Infrared (NDIR), diffusion sampling

Sensor Coverage Area:....100 m<sup>2</sup> (1000 ft<sup>2</sup>) typical

Temp. Dependence:.....0.2% FS per °C

Stability:.....**CDD4A:** < 2 % FS over life of sensor  
**CDD4B:** < 5 % FS over life of sensor

Sensor Life Span:.....15 years typical

Press. Dependence:.....0.13% of reading per mm Hg

Altitude Correction:.....Programmable from 0-5000 ft via keypad

Response Time:.....<2 minutes for 90% step change typical

Warm-up Time:.....<2 minutes

Power Supply:.....20-28 Vac/dc (non-isolated half-wave rectified)

Output Signals:.....4-20 mA active (sourcing), 0-5 Vdc or 0-10 Vdc (field selectable)

Consumption:.....100 mA max @ 24 Vdc, 185 mA max @ 24 Vac (with all options)

Output Drive Capability:.....**Current:** 550 ohms max  
**Voltage:** 10 Kohm min

Output Resolution:.....10 bit PWM

Protection Circuitry:.....Reverse voltage & overvoltage protected

Operation Conditions:.....0° - 50°C (32° - 122°F), 0-95% RH non-condensing

Wiring Connections:.....Screw terminal block (14 to 22 AWG)

External Dimensions:.....145mm W x 100mm H x 63mm D (5.7" x 3.95" x 2.5")  
**Duct Probe:** 177mm (7") long x 25.4mm (1") dia

Enclosure Ratings:.....IP65 (NEMA 4X)

### LCD Display:

Resolution:.....1 ppm CO<sub>2</sub>

Size:.....1.4" w x 0.6" h (35 mm x 15 mm)  
 Alpha-numeric 2 line x 8 character

Backlight:.....Enable or disable via keypad

### Optional Temperature Signal:

Sensing Element:.....Various RTDs or thermistors as a 2-wire resistance output

### Optional Relay Output:

Contact Ratings:.....Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc

Relay Trip Point:.....**CDD4A:** Programmable 500-2000 ppm  
**CDD4B:** Programmable 500-15,000 ppm

Relay Hysteresis:.....**CDD4A:** Programmable 25-200 ppm  
**CDD4B:** Programmable 25-500 ppm

### PART NUMBER SELECTED

### PRODUCT SELECTION INFORMATION:

MODEL	Product Description
<b>CDD4A20</b>	Duct Carbon Dioxide Sensor, 0-2000 ppm
<b>CDD4B20</b>	Duct Carbon Dioxide Sensor, 0-20,000 ppm

CODE	Display
<b>0</b>	Concealed
<b>1</b>	Viewable

CODE	Optional Temperature Sensor (Leave blank if not required)
<b>T2</b>	100 Ω Plat. IEC 751, 385 Alpha, thin film
<b>T5</b>	1801 Ω, NTC Thermistor, ±0.2 C
<b>T6</b>	3000 Ω, NTC Thermistor, ±0.2 C
<b>T7</b>	10,000 Ω, type 3, NTC Thermistor, ±0.2 C
<b>T8</b>	2.252K Ω, NTC Thermistor, ±0.2 C
<b>T12</b>	1000 Ω Platinum, IEC 751, 385 Alpha, thin film
<b>T13</b>	1000 Ω Nickel, Class B, DIN 43760
<b>T14</b>	10,000 Ω, type 3, NTC Thermistor, ±0.2 C c/w 11K shunt resistor
<b>T20</b>	20,000 Ω, NTC Thermistor, ±0.2 C
<b>T24</b>	10,000 Ω, type 2, NTC Thermistor, ±0.2 C

CODE	Options (Leave blank if no options required)
<b>R</b>	Relay Output

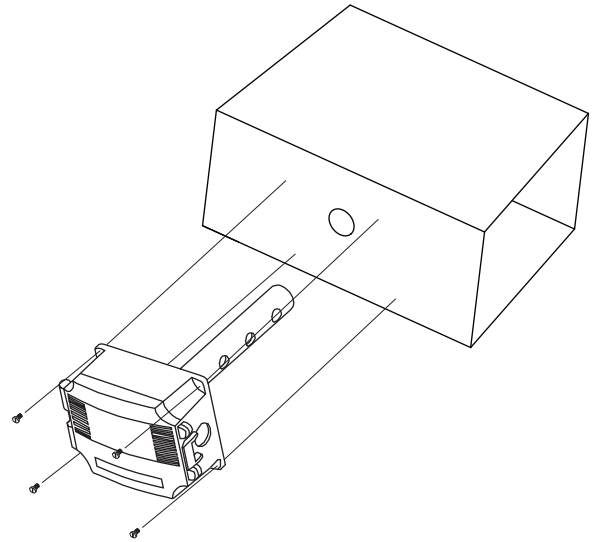
## TYPICAL INSTALLATION:

For complete installation and wiring details, please refer to the product installation instructions.

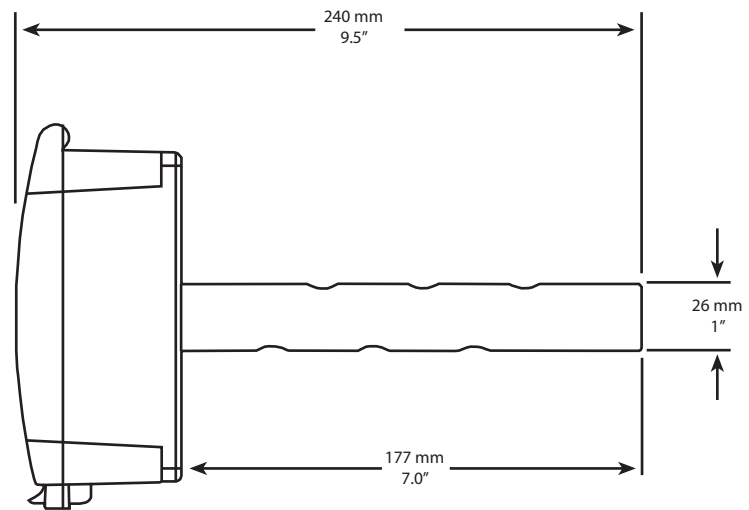
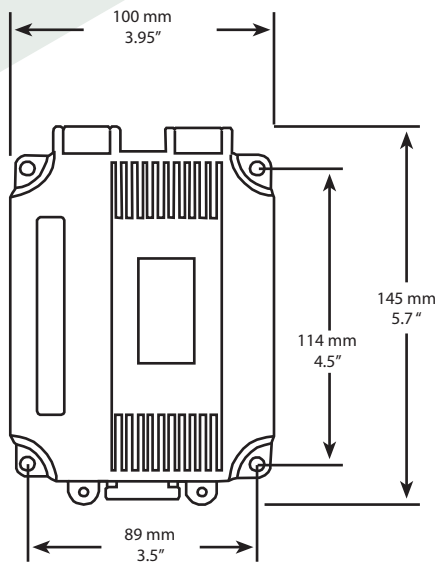
The CDD4 duct type sensor installs on the outside of a return air duct with the sampling tube inserted into the duct.

Mount the sensor in an easily accessible location in a straight section of duct at least five feet from corners and other items that may cause disturbances in the air flow. Avoid areas where the detector is exposed to vibrations or rapid temperature changes. Connect conduit, make proper wiring connections

The CDD has a 3 wire configuration used for connection to the Building Automation System.



## DIMENSIONS nts:



## 5-YEAR CALIBRATION GUARANTEE

Based on the results of years of testing of ACLP software, Greystone now offers a 5-year calibration guarantee on all its CDD series wall and duct mount sensors used for CO<sub>2</sub> based ventilation control when operated in an environment that can utilize ACLP software. If the sensor is found to be out of calibration more than 150 PPM as compared to a calibration gas or recently calibrated reference, Greystone will provide a free factory calibration of the sensor if returned to Greystone. This guarantee only applies if the sensor is operated in an environment where inside levels periodically drop to outside concentrations (i.e. during evenings or weekends when there is no occupancy) as is required by ACLP software. If a space does not experience a periodic drop to outside levels (i.e. where occupancy is 24 hours, 7 days/week), ACLP software should be deactivated. With ACLP deactivated (via menu buttons), calibration may be required every 2 to 3 years.



# GREYSTONE

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**RoHS**  
COMPLIANT



*Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC/R sensors and transmitters for Building Automation Management Systems.*

*We have conscientiously established a worldwide reputation as an industry leader by maintaining leading-edge design technology, prompt technical support, and a commitment to on-time deliveries. We take pride in our Quality Management System which is ISO 9001 certified, assuring our customers of consistent product reliability.*

GREYSTONE HAS AN ISO 9001 REGISTERED QUALITY SYSTEM